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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

MEMORANDUM

DATE: March 31, 1995

SUBJECT: Request for a Time-Critical Removal Action at the
Nease Chemical Site, Salem, Columbiana County, Ohio
(Site Spill # A38, CERCLIS # OHD980610018)

FROM: Sheila A. Sullivan, OSC/RPM *Sheila A. Sullivan*

TO: William E. Muno, Director
Waste Management Division

THRU: Jodi L. Traub, Associate Division Director
Office of Superfund

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the time-critical removal action described herein for the Nease Chemical Site, located in the City of Salem, Columbiana County, Ohio. This Site is on the National Priorities List, and is currently undergoing a Remedial Investigation/Feasibility Study (RI/FS). This removal action is necessary to abate the immediate threat to human health and the environment posed by the off-site migration of contaminated leachate seeps, sediments and surface water runoff. The principal site-specific contaminants include mirex, photomirex, kepone, other semi-volatile organics, volatile organics, and metals. This removal action seeks to alleviate these threats by collecting and treating the contaminated leachate, groundwater and surface waters on-site, and by constructing the necessary physical barriers and controls to prevent sediment movement from the Site.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Removal site evaluation

The Nease Chemical Company produced a variety of chemical compounds that contained known or suspected human carcinogens. Hazardous substances were released to the soils and groundwater through unlined ponds on-site that were used by Nease to treat manufacturing process waste. Contaminants were also probably released to the soils and



groundwater when hazardous substances escaped from drums that had been buried on-site. Contamination was released to the Middle Fork of Little Beaver Creek (MFLBC) through surface water run off from the ponds into the creek. Over the years, U.S. EPA and Ohio EPA conducted investigations and inspections on and around the Nease property and documented contamination of topsoils, sub-surface soils and groundwater, as well as in the surface water, sediments, and some living organisms in MFLBC.

- On April 24, 1992, U.S. EPA collected water and sediment samples from the Nease Chemical Site. Chemical analysis of a sediment sample indicated the presence of Mirex at 4,400 parts per billion (ppb), 1,2-dichloroethene (total) at 2,000 ppb, methylene chloride at 1,800 ppb, and tetrachloroethylene (PCE) at 1,900 ppb. A surface water sample revealed the presence of Mirex at 2.5 ppb, 1,2-dichloroethene (total) at 4,000 ppb, methylene chloride at 1,000 ppb, and acetone at 2,000 ppb.
- On October 15, 1992, U.S. EPA collected additional sediment and water samples on or immediately adjacent to the Nease Chemical Site. The surface water sample analysis showed the presence of 1,1,2,2-tetrachloroethane at 1,500 ppb, 1,2-dichloroethane at 710 ppb, trichloroethylene (TCE) at 420 ppb, benzene at 1,200 ppb, PCE at 570 ppb, and toluene at 120 ppb. The sediment samples showed the presence of Mirex in all of the sample locations. The highest concentration was 170,000 ppb.
- On November 24, 1992, U.S. EPA collected soil and water samples from a leachate seep on the Nease Chemical Site. The soil contained levels of chlorobenzene at 880 ppb and Mirex at 3,200 ppb. The water contained vinyl chloride at 190 ppb, trans-1,2-dichloroethene at 390 ppb, chloroform at 5 ppb, 1,2-dichloroethane at 67 ppb, TCE at 68 ppb, benzene at 73 ppb, toluene at 22 ppb, chlorobenzene at 340 ppb, and Mirex at 2 ppb.
- The data from groundwater monitoring wells that Nease placed on- and off-site in conjunction with an ongoing RI/FS, revealed concentrations of up to 150 ppb of Mirex in the groundwater.

2. Physical location

The Nease Chemical Site is located 2.5 miles northwest of the City of Salem, Ohio in northern Columbiana County, near the border of southern Mahoning County. The Site is situated on the north side of State Route 14, and is west of Allen Road. Conrail railroad tracks traverse the Site. The Site covers approximately 44 acres and is surrounded by lightly developed land on three sides and an industrial plant (Crane-Deming Company) on the northeast side. To the immediate north is a large wooded area, and to the south is a large field. The Salem Waste Water Treatment Plant is located about 2,400 feet east of the Site and there are homes immediately east and southwest of the Site. A total of 124 residences are located within one mile of the Site, and 45 of these are located within a one-half mile radius of the Site.

The Site is located on a topographic high, the axis of which runs southeast and northwest. The majority of the Site slopes to the northeast and drains toward the MFLBC. The MFLBC is considered an important natural resource to this region. The headwaters of the MFLBC originate about four river miles upstream of the Nease Chemical Site. The Creek flows north from the Site for about five river miles through pasture lands and then turns southward and runs about 35 miles to its confluence with the Ohio River. Certain stretches of the MFLBC are designated as wild and scenic. The ecological corridors along the MFLBC are considered to be diverse wetlands on which a number of state parks and forests are situated. The Egypt Swamp, a 500-acre contiguous wetland, is hydrologically connected to the Creek and is an important delineated wetland in this area.

3. Site characteristics

Nease Chemical Company owned and operated a chemical manufacturing plant on the Site from 1961 until 1975. From 1961 until 1973, Nease Chemical Company produced a variety of chemical compounds including household cleaning compounds, fire retardants, pesticides, and other related chemical intermediates, including compounds that are known or suspected human carcinogens. All of Nease's chemical manufacturing processes at its Salem, Ohio facility ceased in 1975 after the plant was decommissioned.

No formal U.S. EPA removal activities have been previously conducted at the Site. Several preliminary and remedial investigations, however, have occurred with regard to this Site.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

Chlorobenzene, 1,2-dichloroethene, chloroform, 1,2-dichloroethane, TCE, benzene, toluene, PCE, tetrachloroethane, and Mirex are "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14).

Currently, leachate seeps into surface and ground water on the Nease Chemical Site, provide a route for the migration of the contaminants to the waters of and wetlands along the MFLBC. In the past, hazardous substances had been released to the soils and groundwater through unlined ponds on-site that were used by Nease to treat manufacturing process waste. Contaminants were also probably released to the soils and groundwater when hazardous substances escaped from drums that Nease had buried on-site. Contamination was further released to MFLBC through tributaries of the creek that run through the Nease property.

Because there are a number of residences located near the Site, there is a risk that humans and domestic animals, could come into contact with contaminated soils and surface waters, and further spread the contamination to other areas.

5. NPL status

In late 1983, the Nease Chemical Site was placed on the National Priorities List (NPL). Pursuant to the Administrative Order by Consent, effective February 26, 1988, Ruetgers-Nease Corporation is currently completing an RI/FS for the Site.

B. Other Actions To Date

1. Previous Actions

The Ohio EPA Wastewater Program conducted enforcement activities which led to the eventual closure and decommissioning of the Nease Chemical manufacturing facility in 1975. Nease voluntarily conducted response activities, after the Ohio EPA Department of Emergency and Remedial Response (DERR) and U.S. EPA inspections revealed releases of hazardous substances to surface and ground water through leachate seeps on-site. These voluntary activities, however, were ineffective in controlling the problem.

2. Current actions

The Ruetgers-Nease Corporation, on behalf of Nease Chemical, is currently conducting an RI/FS at the Site. Both U.S. EPA and Ohio EPA are overseeing this process. The removal activities prescribed by this Memorandum will ultimately be integrated into the selected remedial action.

C. State and Local Authorities' Roles

1. State and local actions to date

In 1973, Ohio EPA (OEPA) cited Nease for wastewater violations which resulted in Nease entering into a Consent Order with OEPA to discontinue manufacturing operations until a new wastewater permit could be obtained. Instead of constructing a wastewater treatment system, Nease chose to discontinue manufacturing at the Site. Under the supervision of OEPA, decommissioning activities followed shortly thereafter until 1975.

The Ohio EPA DERR, under a Management Assistance Grant from U.S. EPA, is providing review and oversight of the removal action activities. The Ohio Department of Health is conducting a human exposure assessment study at the Site as a follow-up to the positive mirex results from the previous biomonitoring. A Community Assistance Panel has been formed to foster information exchange with ODH during the study. The Ohio Department of Natural Resources has been involved in the issues impacting the MFLBC, the local and state parks, and other associated wetlands. The Reynoldsburg, Ohio office of the U.S. Department of Interior Fish and Wildlife Service has been involved in the remedial project in a review capacity.

2. Potential for continued State/local response

The OEPA has recently requested additional funding under the Management Assistance Grant to conduct joint oversight of the removal activities. U.S. EPA will continue to coordinate with all currently involved State and local authorities.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Conditions currently exist at the Nease Chemical Site, which if not addressed by implementing the removal action documented herein, may pose an imminent and substantial endangerment to public health or welfare or

the environment. The actions discussed in this Memorandum, if properly performed, are consistent with the National Contingency Plan (NCP), 40 CFR Part 300, as amended, and CERCLA; and are reasonable and necessary to protect the public health, welfare and the environment because of the following factors:

- a. **actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants;**

Populations and the environment surrounding the Site are actually or potentially exposed to hazardous material from the Site because of the facility's proximity to residential and agricultural areas. The nearest residence is about 50 feet from the Nease Chemical Site. There are also some dairy farms in the vicinity of the Site. On-site tributaries, which empty into MFLBC, could provide an avenue for hazardous substances to come into contact with and contaminate wildlife and domestic animals, and to enter the food chain. A fence currently surrounds the Site. Since 1982, on-site tributaries have been addressed with the installation and periodic upgrading of fabric filter barriers, rock barriers, and the presence of soil erosion control measures such as a seeded grass covered area, geotextile erosion control matting, and diversion ditches and outlet control structures to serve as up-stream measures to limit transport of sediment into the MFLBC and to serve as an erosion control measure.

- b. **weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;**

The facility is located in Northeast Ohio which has heavy rainstorms in the summer and heavy snow in the winter. The potential for surface run-off from the contaminated areas of the Site to the surrounding property exists during heavy precipitation events. There is also a potential for contaminant migration into the groundwater and the MFLBC.

- c. **other situations or factors which may pose threats to public health or welfare or the environment.**

The potential exists for surface water contamination to migrate from the Site to the MFLBC, a tributary of the Ohio River. A sediment sample collected from the off-site tributary adjacent to the east side of the railroad tracks, has indicated mirex at elevated levels.

IV. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the hazardous substances on Site, and the potential exposure pathways to nearby human and ecological populations described in the preceding sections, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. REMOVAL ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Description of removal activities

The following actions are designed to alleviate the potential and actual threats to human health and the environment posed by the hazardous contaminants at the Site:

- Develop a Work Plan for the removal action that includes a Site safety and health plan, a sampling and analysis plan, and a schedule of the work to be performed;
- Collect all contaminated groundwater from the existing collection areas, and properly dispose of it off-site;
- Install float activated pumps in the existing groundwater collection system and initiate continuous pumping of leachate;
- Commence operation of the existing on-site leachate treatment system located in the metal warehouse building on the Nease property;
- Review shallow hydrogeologic data from the Remedial Investigation and July 29, 1993 sampling results and, utilizing that information, 1) develop, as an addendum to the Work Plan, surface water management and leachate collection and treatment measures for the area of the Nease Chemical Site that lies Northeast of the Conrail tracks, and 2) develop, as an addendum to the Work Plan, any additional necessary measures for the existing leachate collection and treatment system on the Nease Chemical Site at large.

The addendum to the Work Plan shall include a schedule for the installation of the work discussed therein;

- Install and commence operation of the surface water management and leachate collection and treatment measures for the area of the Nease Chemical Site that lies Northeast of the Conrail tracks, and completely install and commence operation of any additional necessary measures for the existing leachate collection and treatment system on the Nease Chemical Site at large.
- Inspect, monitor, contain, and address documented leachate releases and seeps.
- Dispose of hazardous materials from the Nease Chemical Site at a facility approved by the On-Scene Coordinator and in accordance with the Resource Conservation and Recovery Act of 1976 (RCRA), 42 U.S.C. Section 6901, et seq., as amended, the U.S. EPA Revised Off-Site Policy, and all other applicable Federal, State, and local requirements.

2. Contribution to remedial performance

An array of remedies will be evaluated for the Nease Chemical NPL Site during the Feasibility Study phase of the remedial process. As the RI/FS is continuing, no remedial action has been selected at this time. Specific threats exist at this Site, which must be addressed prior to long-term remediation. These threats are detailed in Section III a-c of this Memorandum. The production of leachate and its potential migration off-site must be abated completely via the collection and treatment of existing leachate and the prevention of leachate formation via the extraction of shallow groundwater from the surficial sand aquifers whose outcroppings are coincident with leachate seeps. The movement of contaminated sediments, surface soils and surface water must be stabilized to protect public health, welfare and the environment until a permanent remedy can be effected. This stabilization will be accomplished via the engineering controls described in Section III a. It is anticipated that this removal action, when completed, will provide for groundwater collection and treatment and contaminated soils/sediment removal; therefore, the specified removal action will be entirely consistent with the future remedial actions selected for

selected for this Site.

3. Applicable or relevant and appropriate requirements

All Federal ARARs and State ARARs identified in a timely manner for this removal action will be complied with to the extent practicable.

4. Project schedule

The estimate project schedule is attached.

B. Estimated Costs

The costs for this action are estimated at two-million dollars. Pursuant to an Administrative Order By Consent (Attachment D), Ruetgers-Nease Corporation has agreed to fund this removal action and to pay U.S. EPA's oversight costs.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Although health advisory signs have been posted along the MFLBC, the gravity of this situation may not be fully realized by the potentially exposed populations. Delayed action will increase both human and ecological health risks to the populations inhabiting the MFLBC and adjacent floodplain corridors.

VII. OUTSTANDING POLICY ISSUES

No additional outstanding policy issues remain that were not previously addressed.

VIII. RECOMMENDATION

This decision document represents the selected removal action for the Nease Chemical Site in Salem, Ohio, developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based on the Administrative Record for the Site. Conditions at the Site meet the NCP Section 300.415 (b) (2) criteria for a removal and I recommend your approval of the above-described removal action.

APPROVE:

Wm. E. Myers
Director, Waste Management Division

DATE:

6/16/95

DISAPPROVE:

Director, Waste Management Division

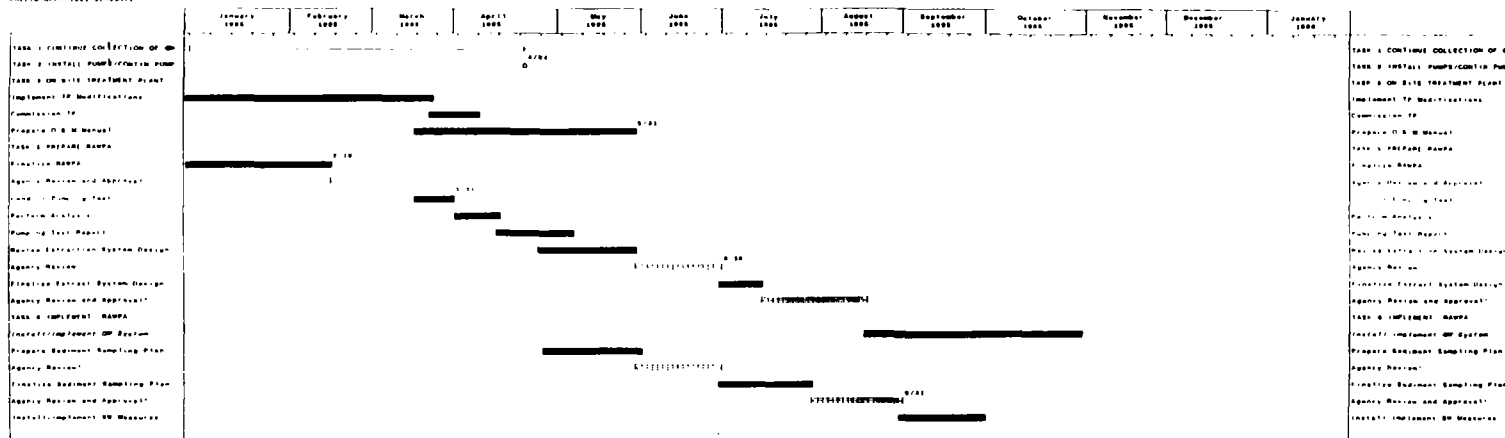
DATE:

Attachments: A. Detailed Removal Action Schedule
B. Updated Treatment Plant Schedule
C. Administrative Record Index
D. Administrative Order

MARCH 19, 1995

AUTHORS: [REDACTED] [REDACTED] [REDACTED]
 PROJECT: [REDACTED] [REDACTED] [REDACTED]

PROJECT: [REDACTED] [REDACTED] [REDACTED]



FACSIMILE TRANSMISSION

GOLDER ASSOCIATES INC.

305 Fellowship Road, Suite 200
Mt. Laurel, New Jersey 08054

Telephone: (609) 273-1110
Fax: (609) 273-0778

DATE: March 29, 1995

Project No.: 933-6158

TO: Sheila Sullivan, USEPA (312) 353-5541
Joan Gonzalez, D&VWST (312) 346-4781

FR: Brian Eichlin

RE: RUETGERS-NEASE TREATMENT PLANT SCHEDULE

Total Number of pages (including this cover page): 2

Please find attached an updated schedule for completion of the Treatment Plant Modifications for the Nease Site, Salem, Ohio. Please note that this schedule includes completion of the modifications, commissioning, and checkout of the new equipment and start-up and monitoring of the modified system. The schedule is based on conversations with Burlington Environmental Inc, Ruetgers Nease's contractor for the treatment plant modifications, and the assumption that certain critical items, such as profile approvals by PADER and Envirotrol, Inc for regeneration of the spent activated carbon, will proceed without delay. The schedule includes expected sampling dates for monitoring the performance of the Treatment Plant. Sampling will be performed in accordance with the approved Treatment Plant Modifications Work Plan Revision # 2.

I will forward a copy of this schedule to Joe Gadomski from Black & Veatch Waste Science, Inc. and I will keep him informed of my schedule relating to site visits. Please do not hesitate to contact me if you should have any questions regarding this schedule.

Regards,

Brian Eichlin

cc: Ralph Pearson, Ruetgers-Nease
Joe Gadomski, Black & Veatch (312) 346-1781

PLEASE MARK TIME AFTER TRANSMISSION

Sent at _____ am/pm

By _____

THE DOCUMENT(S) WITH THIS TRANSMISSION ARE ONLY FOR RECIPIENT(S) NAMED ABOVE AND CONTAIN PRIVILEGED/CONFIDENTIAL INFORMATION. UNAUTHORIZED DISCLOSURE, DISSEMINATION, AND/OR COPYING OF THIS TRANSMISSION IS STRICTLY PROHIBITED. IF RECEIVED IN ERROR, PLEASE DESTROY. QUESTIONS/PROBLEMS WITH TRANSMISSION: CONTACT THE OPERATOR AT (609) 273-1110.

Revised: 29 - Mar - 95

933-6158.5608

Ruetger's Nease Salem Ohio - Treatment Plant Modifications Schedule

Task/Week	Week of 3/27	Week of 4/3	Week of 4/10	Week of 4/17	Week of 4/24	Week of 5/01	Week of 5/08
Electrical and Mechanical Completion							
Contractor Commissioning & Replace GAC's							
System Start-up & Testing							
Day One Sampling						5/01	
Day Five Sampling						5/05	
Week Two Sampling							5/10

00-00-00 00:00PM FROM GUYTON, NE. LAUREL 00 00:00:00 00 00:00:00 00:00:00

U.S. EPA ADMINISTRATIVE RECORD
REMOVAL ACTION
NEASE CHEMICAL COMPANY
SALEM, OHIO
ORIGINAL
03/30/95

Attachment C

DOC# =====	DATE =====	AUTHOR =====	RECIPIENT =====	TITLE/DESCRIPTION =====	PAGES =====
1	11/17/93	U.S. EPA	Ruetgers-Nease Chemical Company, Inc.	Administrative Order by Consent	19
2	11/23/93	Golder Associates Inc.	U.S. EPA	Treatment Plant Performance Evaluation Work Plan (Revision 1)	490
3	02/00/94	Golder Associates Inc.	U.S. EPA	Treatment Plant Performance Evaluation Report	354
4	04/00/94	Golder Associates Inc.	U.S. EPA	Removal Action Work Plan (Revision 2); Volume 1 of 2: Work Plan and Treatment Plant Performance Evaluation Work Plan	92
5	04/00/94	Golder Associates Inc.	U.S. EPA	Removal Action Work Plan (Revision 2); Volume 2 of 2: Field Sampling Plan, Quality Assurance Project Plan, and Health and Safety Plan	686
6	06/00/94	Golder Associates Inc.	U.S. EPA	Treatment Plant Modifications Work Plan (Revision 2)	67
7	07/00/94	Golder Associates Inc.	U.S. EPA	Treatment Plant Modifications Design Technical Memorandum, Final	68
8	09/09/95	U.S. EPA		Action Memorandum (PENDING)	0

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0000	1 INDEX TO COMPENDIUM OF CERCLA RESPONSE SELECTION GUIDANCE DOCUMENTS	05/01/89	- OMPE - PRC-ENVIRONMENTAL MANAGEMENT, INC	Final	8		1) DATA ELEMENT DEFINITIONS 2) ORGANIZATIONAL ABBREVIATIONS AND ACRONYMS IDENTIFIED IN INDEX	
** Pre Remedial								
0001	1 EXPANDED SITE INSPECTION TRANSITIONAL GUIDANCE FOR FY-88	10/01/87	- CERER	Final	74	2		OSWER #9345 1 02
0002	1 PRELIMINARY ASSESSMENT GUIDANCE FISCAL YEAR 1988	01/01/88	- CERER/ESCD	Final	83	2		OSWER #9345 0 01
** Removal Action								
1000	1 CERCLA REMOVAL ACTIONS AT HAZARDOUS WASTE SITES	01/23/86	- LONGEST, H L /CERER	Final	2	2		OSWER #9360 0 08
1001	1 COSTS OF REMEDIAL RESPONSE ACTIONS AT UNCONTROLLED HAZARDOUS WASTE SITES	01/01/81	- RISHEL, H L , ET AL /SCS ENGINEERS - ALBRECHT, O W /MERL	Final	164	1		
1002	1 EMERGENCY RESPONSE PROCEDURES FOR CONTROL OF HAZARDOUS SUBSTANCE RELEASES	01/01/83	- MEYER, R W /ROCKWELL INTERNATIONAL - MCCARTHY, L T /MERL	Final	23	1		EPA 600/3-84-021
1003	1 ENVIRONMENTAL REVIEW REQUIREMENTS FOR REMOVAL ACTIONS	04/13/87	- CERER/ERD	Final	6	2		OSWER #9378 0 05
1004	1 GUIDANCE ON IMPLEMENTATION OF THE "CONTRIBUTE TO REMEDIAL PERFORMANCE" PROVISION	04/06/87	- OSWER	Final	6	2		OSWER #9360 0 13
1008	2 GUIDANCE ON REMOVAL ACTIONS INVOLVING NATIONALLY SIGNIFICANT OR PRECEDENT SETTING ISSUES	04/01/89	- LONGEST, H L /CERER	Final	9	2	1) REQUEST FOR CLARIFICATION	OSWER #9360 0 19
1005	1 INFORMATION ON DRINKING WATER ACTION LEVELS	04/19/88	- FIELDS, JR , T /OSWER/ERD	Final	17	2	1) MEMO RELEASES FROM FAMILIARLY APPLIED PESTICIDES 2) MEMO EROD CONTAMINATION 3) GUIDANCE FOR ETHYLENE DIAMINE IN DRINKING FDO	
1006	1 SUPERFUND REMOVAL PROCEDURES, REVISION #3	02/01/88	- OSWER/CERER	Final	365	1		OSWER #9360 0 031
1007	1 THE ROLE OF EXPEDITED RESPONSE ACTIONS UNDER SARA	04/21/87	- LONGEST, H L /CERER	Final	3	2		OSWER #9360 0 15
4002	26 INTERIM FINAL GUIDANCE ON REMOVAL ACTION LEVELS AT CONTAMINATED DRINKING WATER SITES [Secondary Reference]	10/06/87	- OSWER/CERER	Final	9	2		OSWER #9360 1 01
4003	32 REMOVAL COST MANAGEMENT MANUAL [Secondary Reference]	04/01/88	- OSWER/CERER	Final	170	1		OSWER #9360 0 021

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** RI/FS - General								
2000	2 CASE STUDIES 1-23 REMEDIAL RESPONSE AT HAZARDOUS WASTE SITES	03/01/84	- CERD/VEET/MERL - CERCLA/CERR	Final	830	1		EPA 540/2-84/002B
2001	3 EPA GUIDE FOR MINIMIZING THE ADVERSE ENVIRONMENTAL EFFECTS OF CLEANUP OF UNCONTROLLED HAZARDOUS-WASTE SITES	06/01/85	- ENVIRONMENTAL RESEARCH LABORATORY	Final	250	2		EPA/600/8-85/008
2002	3 GUIDANCE FOR CONDUCTING REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES UNDER CERCLA	10/01/88	- CERCLA/CERR	Final	390	1		CERCLA #9355 1-01
2003	3 JOINT CORPS/EPA GUIDANCE	06/24/83	- CERCLA/PAS	Final	42	2		CERCLA #9295 2-02
2004	4 MODELING REMEDIAL ACTIONS AT UNCONTROLLED HAZARDOUS WASTE SITES (VOL. I-IV)	04/01/85	- BOUTWELL, S.H., ET AL./ANDERSON-NICHOLS AND CO - CERCLA/CERR - AMMON, D.C. AND BOUTWELL, JR. T.O. & MERL	Final	350	1		CERCLA #9355 0-08
2005	4 POLICY ON FENCED PLAINS AND WETLAND ASSESSMENTS FOR CERCLA ACTIONS	08/01/85	- HEDERMAN, JR., W.W./CERR - LUCERO, C./OMPE	Final	9	2		CERCLA #9280 0-02
2006	4 REMEDIAL RESPONSE AT HAZARDOUS WASTE SITES SUMMARY REPORT	03/01/84	- CERD/MERL	Final	95	1		EPA 540/2-84/002A
2007	4 REVISED PROCEDURES FOR IMPLEMENTING OFF-SITE RESPONSE ACTIONS	11/13/87	- PORTER, J.W./CERCLA	Final	20	2		CERCLA #9834 11
2008	4 RI/FS IMPROVEMENTS	07/23/87	- LONGEST, H.L./CERR	Final	11	2	1) RI/FS IMPROVEMENTS	CERCLA #9355 0-20
2009	4 RI/FS IMPROVEMENTS FOLLOW-UP	04/25/88	- LONGEST, H.L./CERR	Final	16	2	1) RI/FS IMPROVEMENTS FOLLOW-UP 2) REMEDIAL INFORMATION TRANSFER ACTIVITIES	CERCLA #9355 1-05
2010	4 SUPERFUND FEDERAL LEAD REMEDIAL PROJECT MANAGEMENT HANDBOOK	12/01/86	- CERR	Draft	179	1		CERCLA #9355 1-1
2011	5 SUPERFUND REMEDIAL DESIGN AND REMEDIAL ACTION GUIDANCE	06/01/86	- CERR	Final	100	1		CERCLA #9355 0-4A
2012	5 SUPERFUND STATE LEAD REMEDIAL PROJECT MANAGEMENT HANDBOOK	12/01/86	- CERR	Final	120	1		CERCLA #9355 2-1
** RI/FS - RI Data Quality/Site & Waste Assessment								
2100	5 A COMPENDIUM OF SUPERFUND FIELD OPERATIONS METHODS	12/01/87	- CERR - OMPE	Final	550	1		CERCLA #9355 0-14
2101	6 DATA QUALITY OBJECTIVES FOR REMEDIAL RESPONSE ACTIVITIES DEVELOPMENT PROCESS	03/01/87	- CORA FEDERAL PROGRAMS CORP - CERR/OMPE	Final	150	1		CERCLA #9355 0-7B

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2102	6 DATA QUALITY OBJECTIVES FOR REMEDIAL RESPONSE ACTIVITIES - EXAMPLE SCENARIO RI/IS ACTIVITIES AT A SITE W/ CONTAMINATED SOILS AND GROUNDWATER	03/01/87	- COM FEDERAL PROGRAMS CORP - CERCLA/RCRA	Final	120	1		COSMER #9355 0-7H
2103	6 DESIGN AND IMPLEMENTATION OF HAZARDOUS WASTE REACTIVITY TESTING PROTOCOL	02/01/84	- HOLBACH, C.D., ET AL /ACTREX CORP - BARKLEY, N /MERI	Final	150	1		EPA-600/2-84-051
2104	6 FIELD SCREENING FOR ORGANIC CONTAMINANTS IN SAMPLES FROM HAZARDOUS WASTE SITES	04/02/86	- ROFFMAN, H.K., ET AL /ALUS CORP. - CARTER, A /MICHIGAN DEPT OF NATURAL RESOURCES - THOMAS, T /EPA	Final	11	2	1) MEMO FIELD SCREENING FOR ORGANIC CONTAMINANTS	
2105	6 FIELD SCREENING METHODS CATALOG USER'S GUIDE	09/01/88	- CERCLA/RCRA	Final	90	1		EPA/540/2-88/005
2106	6 FIELD STANDARD OPERATING PROCEDURES MANUAL #4-SITE ENTRY	01/01/85	- CERCLA/RCRA	Final	29	2		COSMER #9285 2-01
2107	7 FIELD STANDARD OPERATING PROCEDURES MANUAL #6-WORK ZONES	04/01/85	- CERCLA/RCRA	Final	19	2		COSMER #9285 2-04
2108	7 FIELD STANDARD OPERATING PROCEDURES MANUAL #8 AIR SURVEILLANCE	01/01/85	- CERCLA/RCRA	Final	24	2		COSMER #9285 2-03
2109	7 FIELD STANDARD OPERATING PROCEDURES MANUAL #9-SITE SAFETY PLAN	04/01/85	- CERCLA/RCRA	Final	26	2	1) SAMPLE SITE SAFETY PLAN AND CRIM SAFETY PLAN 2) EMERGENCY OPERATION CENTER'S REAL TIME MONITOR 3) RESPONSE SAFETY CHECK-OFF SHEET	COSMER #9285 2-05
2110	7 GEOPHYSICAL METHODS FOR LOCATING ABANDONED WELLS	07/01/84	- TRISOMNET, L.M., ET AL /U.S. GEOLOGICAL SURVEY - VANCE, J.J. /EPA	Final	211	1		EPA-600/4-84-065
2111	7 GEOPHYSICAL TECHNIQUES FOR SENSING BURIED WASTES AND WASTE MIGRATION	06/01/84	- BENSON, R.C., ET AL /TECHNOS, INC - VANCE, J.J. /EPA	Final	236	1		EPA-600/7-84/064
2112	8 GUIDELINES AND SPECIFICATIONS FOR PREPARING QUALITY ASSURANCE PROGRAM DOCUMENTATION	06/01/87	- CERCLA/RCRA QUALITY ASSURANCE MANAGEMENT STAFF	Final	31	2	1) MEMO GUIDANCE ON PREPARING QA/QA'S DATED 6/10/87	
2113	8 LABORATORY DATA VALIDATION FUNCTIONAL GUIDELINES FOR EVALUATING INORGANICS ANALYSES	07/01/88	- EPA DATA REVIEW WORK GROUP - BLEYER, R. /VIAR AND CO /SAMPLE MGMT OFFICE - HSED	Draft	20	2		
2114	8 LABORATORY DATA VALIDATION FUNCTIONAL GUIDELINES FOR EVALUATING ORGANICS ANALYSES	02/01/88	- BLEYER, R. /VIAR AND CO /SAMPLE MGMT OFFICE - EPA DATA REVIEW WORKGROUP - HSED	Draft	45	2		

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2115	8 PRACTICAL GUIDE FOR GROUND-WATER SAMPLING	09/01/85	- BARCELONA, M J , ET AL / ILLINOIS ST WATER SURVEY - SCALF, M R / ORDOVERL	Final	175	1		EPA/600/2-85/104
2116	8 SEDIMENT SAMPLING QUALITY ASSURANCE USER'S GUIDE	07/01/85	- BARTH, D S & STARKS, T S / UNIV OF NEV, LAS VEGAS - BROWN, K W / EARD	Final	120	1		EPA/600/4-85/048
2117	8 SOIL SAMPLING QUALITY ASSURANCE USER'S GUIDE	05/01/84	- BARTH, D S & MASON, B J / U OF NEVADA, LAS VEGAS - BROWN, K / ORD/EARD	Final	104	1		EPA 600/4-84/043
2118	9+ TEST METHODS FOR EVALUATING SOLID WASTE, LABORATORY MANUAL PHYSICAL/CHEMICAL METHODS, THIRD EDITION (VOLUMES 1A, 1B, 1C, AND 11)	11/01/86	- COSHER	Final	3000	1		
2119	11 USER'S GUIDE TO THE CONTRACT LABORATORY PROGRAM	12/01/88	- CERCLA/CLP SAMPLE MANAGEMENT OFFICE	Final	220	2		COSHER #9240 0-1
** RI/FS - Land Disposal Facility Technology								
2200	12 COVERS FOR UNCONTROLLED HAZARDOUS WASTE SITES	09/01/85	- MCNENY, C C , ET AL / U S COE/MS - FOUTCHOFF, J M / MERL	Final	475	2		EPA/540/2-85/002
2201	13 DESIGN, CONSTRUCTION, AND EVALUATION OF CLAY LINERS FOR WASTE MANAGEMENT FACILITIES	11/01/88	- COLEMAN, J L , ET AL / NUS - ROLLER, M H / MERL	Final	500	2		EPA/530/SH-86/1071
2202	13 EVALUATING COVER SYSTEMS FOR SOLID AND HAZARDOUS WASTE	09/01/82	- LUTON, R J / U S A COE/MS - LANDRETH, R E / MERL	Final	58	2		COSHER #9476 00 1
2203	13 GUIDANCE MANUAL FOR MINIMIZING POLLUTION FROM WASTE DISPOSAL SITES	08/01/78	- TOLMAN, A L , ET AL / A W MARTIN ASSOCIATES, INC - SANNING, D E / MERL	Final	83	1		EPA-600/2-78-142
2204	13 LAND DISPOSAL RESTRICTIONS	08/11/87	- LONGEST, H L / CERL - LUCERO, C / OMPE	Final	23	2	1) SUMMARY OF MAJOR LER PROVISIONS AND CALIFORNIA LIST PROHIBITIONS 2) OTHER ATTACHS CITED ARE AVAILABLE IN	

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2205	14	LINING OF WASTE CONTAINMENT AND OTHER IMPONEMENT FACILITIES	09/01/88	- MATRECON, INC - LANDRETH, R. /RISK REDUCTION ENGINEERING LAB	Final	950	2		
2206	15	LINING OF WASTE IMPONEMENT AND DISPOSAL FACILITIES	03/01/83	- LANDRETH, R. /MERL	Final	480	2		OSWER #9480 00 4
2207	15	PROCEDURES FOR MODELING FLOW THROUGH CLAY LINERS TO DETERMINE REQUIRED LINER THICKNESS	01/01/84	- OSW	Draft	145	2		OSWER #9480 00 9)
2208	15	CERCLA GUIDANCE EXISTENT LANDFILL DESIGN LINER SYSTEMS AND FINAL COVER	07/01/82	- EPA	Draft	30	2		
2209	15	SETTLEMENT AND COVER SUBSIDENCE OF HAZARDOUS WASTE LANDFILLS PROJECT SUMMARY	05/01/85	- MURPHY, W.L. - GIBERTI, P.A.	Final	4	2		EPA-600/S2 85 015
2210	15	SUPPLEMENTARY GUIDANCE ON DETERMINING LINER/LEACHATE COLLECTION SYSTEM COMPATIBILITY	08/07/86	- NEEDLE, B.R. /PERMITS AND STATE PROGRAMS DIV	Final	60	2	1) ANALYSIS AND FINGERPRINTING OF UNEXPOSED & EXPOSED POLYMERIC MEMBRANE LINERS MATRECON, INC. 2) SEC 3019 EXPOSURE INFO AND HEALTH ASSESSMENTS	OSWER #9480 00 13
2211	15	TECHNICAL GUIDANCE EXISTENT CONSTRUCTION QUALITY ASSURANCE FOR HAZARDOUS WASTE LAND DISPOSAL FACILITIES	10/01/86	- BERGMANN, J.C. /MERL/LAND POLLUTION CONTROL DIV - OSWER	Final	88	2		OSWER #9472 001
2212	15	TREATMENT OF REACTIVE WASTES AT HAZARDOUS WASTE LANDFILLS PROJECT SUMMARY	01/01/84	- SKINNER, D. ET AL /ARHUR D. LITTLE, INC. - LANDRETH, R. /MERL	Final	4	2		EPA/600/S2 83/118
XXX	25	APPLICABILITY OF THE RCRA MINIMUM TECHNICAL REQUIREMENTS RESPECTING LINERS AND LEACHATE COLLECTION SYSTEMS [Secondary Reference]	04/01/85	- SKINNER, J. /OSW	Final	3	2		OSWER #9480 01(85)
**		R/T/S Other technologies							
2200	16	A COMPENDIUM OF TECHNOLOGIES USED IN THE TREATMENT OF HAZARDOUS WASTES	09/01/87	- CER/CERI	Final	49	2		EPA/625/B 87/014

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2301	16 CARBON ADSORPTION ISOTHERMS FOR TOXIC ORGANICS	04/01/80	- DOBBS, R A /MERL - COHEN, J M /MERL	Final	321	2		EPA/600/8-80-021
2302	17 ENGINEERING HANDBOOK FOR HAZARDOUS WASTE INCINERATION	09/01/81	- BONNER, T A , ET AL /MONSANTO RESEARCH CORP - OBERACKER, D A /OET	Final	445	2		COSHER #9488 00 5
2303	17 EPA GUIDE FOR IDENTIFYING CLEANUP ALTERNATIVES AT HAZARDOUS WASTE SITES AND SPILLS BIOLOGICAL TREATMENT	-	- PACIFIC NORTHWEST LABORATORY - RANIERE, L C /CORVALLIS ENVIRONMENTAL RESEARCH LAB	Final	120	2		EPA-600/3-83-063
2304	17 EPA GUIDE FOR INFECTIOUS WASTE MANAGEMENT	05/01/86	- COSHER/COSM	Final	75	2		COSHER #9410 00-2
2305	17 GUIDANCE DOCUMENT FOR CLEANUP OF SURFACE IMPROVEMENT SITES	06/01/86	- COMANOWICZ-CLYDE/ROY F WESTON - BARRI, E /OERR	Final	19	1		EPA/600/3-86-006
2306	17 GUIDANCE DOCUMENT FOR CLEANUP OF SURFACE TANK AND DRUM SITES	05/28/85	- COMANOWICZ-CLYDE/ROY F WESTON/C C JOHNSON - BARRI, E. AND BIXLER, B /OERR	Final	135	1		COSHER #9380 0-03
2307	18 HANDBOOK FOR EVALUATING REMEDIAL ACTION TECHNOLOGY PLANS	08/01/83	- BRENFELD, J AND BASS, J /ARRER D LITTLE INC - PAREN, H R /MERL	Final	439	1		EPA-600/2-83-076
2308	18 HANDBOOK FOR STABILIZATION/SOLIDIFICATION OF HAZARDOUS WASTE	06/01/86	- CLATTINNE JR M J ET AL /U S CER/MES - FOLM COFF, J M /ORDA MERL	Final	125	1		EPA/540/2-86-001
2309	19 HANDBOOK REMEDIAL ACTION AT WASTE DISPOSAL SITES (REVISED)	10/01/85	- ORD/MERL - COSHER/OERR	Final	560	1		EPA/625/6-85/006
2310	20 LEACHATE PLUME MANAGEMENT	11/01/85	- REPO, E AND KUS, C /RJB ASSOCIATES - BARKLEY, M /EPA	Final	590	1		EPA/540/2-85/004
2311	20 MOBILE TREATMENT TECHNOLOGIES FOR SUPERFUND WASTES	09/01/86	- CAMP, DRESSER, AND MCKEE INC - GALER, L D /ARSD	Final	130	1		EPA/540/2-86-0011
2312	21 PRACTICAL GUIDE-TRIAL PLANS FOR HAZARDOUS WASTE INCINERATORS	04/01/86	- CORMAN, P , ET AL /MIDWEST RESEARCH INSTITUTE - OBERACKER, D A /MERL	Final	63	2		EPA/600/2-86/050
2313	21 PRACTICAL GUIDE-TRIAL PLANS FOR HAZARDOUS WASTE INCINERATORS, PROJECT SUMMARY	07/01/86	- CORMAN, P , ET AL /MIDWEST RESEARCH INSTITUTE - OBERACKER, D A /MERL	Final	2	1		EPA/600/52-86/050

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2314	21 PROHIBITION ON THE PLACEMENT OF BULK LIQUID HAZARDOUS WASTE IN LANDFILLS- STATUTORY INTERPRETIVE GUIDANCE	06/11/86	OSWER/OSW	Final	35	1	1) MEMO RE SAME SUBJECT FROM WILLIAMS, M E /OSW	OSWER #9487 00-2A
2315	21 REVIEW OF IN-PLACE TREATMENT TECHNIQUES FOR CONTAMINATED SURFACE SOILS-VOL 2 BACKGROUND INFORMATION FOR IN-SITU TREATMENT	11/01/84	SIMS, R. C., ET AL. / JRB ASSOCIATES BARKLEY, N /MERL	Final	350	1		EPA/540/2-84-003b
2316	21 REVIEW OF IN-PLACE TREATMENT TECHNIQUES FOR CONTAMINATED SURFACE SOILS-VOL 1 TECHNICAL EVALUATION	09/19/84	OSWER/OSWR ORD/MERL	Final	165	1		EPA/540/2-84-003a
2317	22 SLURRY TRENCH CONSTRUCTION FOR POLLUTION MIGRATION CONTROL	02/01/84	OSWR ORD/MERL	Final	220	1		EPA/540/2-84-001
2318	22 SYSTEMS TO ACCELERATE IN SITU STABILIZATION OF WASTE DEPOSITS	09/01/86	MILLER, M., ET AL. /ENVIRONMENTAL CO OHLBE, W. A/MERL	Final	285	1		EPA 540/2-86/002
2319	21 TECHNOLOGY SCREENING GUIDE FOR TREATMENT OF CERCLA SOILS AND SLURRIES	09/01/88	OSWER/OSWR	Final	130	1		EPA 540/2-88/004
2320	22 TREATMENT TECHNOLOGY BRIEFS ALTERNATIVES TO HAZARDOUS WASTE LANDFILLS	07/01/86	EMERL	Final	35	2		EPA/600/8-86/017
** RI/FS Ground Water Monitoring & Protection								
2400	23 CRITERIA FOR IDENTIFYING AREAS OF VULNERABLE HYDROGEOLOGY UNDER RRA- STATUTORY INTERPRETIVE GUIDANCE	07/01/86	OSWER/OSW	Final	950	2		OSWER #9472 00-2A
2401	24 FINAL RRA COMPREHENSIVE GROUND-WATER MONITORING EVALUATION (OME) GUIDANCE DOCUMENT	12/19/86	LUCERO, G. A /OMPE	Final	55	2	1) RELATIONSHIP OF TECHNICAL INADEQUACIES TO GROUND-WATER PERFORMANCE STANDARDS	OSWER #9950-2
2402	24 GROUND-WATER MONITORING AT CLEAN-CLOSING SURFACE IMPONEMENT AND WASTE PILE UNITS	03/31/88	PORTER, J. W /OSWER	Final	3	2		OSWER #9476 00-14
2403	24 GROUND-WATER PROTECTION STRATEGY	08/01/84	OFFICE OF GROUND-WATER PROTECTION	Final	65	2		EPA/440/6-84-002
2404	24 GUIDELINES FOR GROUND-WATER CLASSIFICATION UNDER THE EPA GROUND-WATER PROTECTION STRATEGY	12/01/86	OFFICE OF GROUND-WATER PROTECTION	Final	600	2		
2405	24 OPERATION AND MAINTENANCE INSPECTION GUIDE (RRA GROUND-WATER MONITORING SYSTEMS)	03/30/88	OSWER/OMPE/RRA ENFORCEMENT DIVISION	Final	50	2	1) TRANSMITTAL MEMO RE SAME SUBJECT	OSWER #9950-3

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2406	24 HANDBOOK FOR GROUND-WATER EVALUATIONS	09/01/86	- HAZARDOUS WASTE GROUND WATER TASK FORCE	Final	200	2		OSMER #9080 0-1
2407	25 RCRA GROUND-WATER MONITORING TECHNICAL ENFORCEMENT GUIDANCE DOCUMENT (TECD)	09/01/86	- EPA	Final	270	2		OSMER #9950 1
2408	25 RCRA GROUND-WATER MONITORING TECHNICAL ENFORCEMENT GUIDANCE DOCUMENT, TECD: EXECUTIVE SUMMARY	07/01/87	- LUCERO, G A /OMPE	Final	8	1		OSMER #9950 1-A
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XXXI	25 APPLICABILITY OF THE RCRA MINIMUM TECHNICAL REQUIREMENTS RESPECTING LINERS AND LEACHATE COLLECTION SYSTEMS	04/01/85	- SKINNER, J /OSW	Final	3	2		OSMER #9480 01(85)
XXXI	25 CERCLA COMPLIANCE WITH OTHER ENVIRONMENTAL STATUTES	10/02/85	- PORTER, J W /OSMER	Final	19	1	1) POTENTIALLY APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS	OSMER #9234 0-2
XXX2	25 CERCLA COMPLIANCE WITH OTHER LAWS MANUAL	08/08/88	- OSM	Draft	245	2		OSMER #9234 1-01
XXX3	25 EPA'S IMPLEMENTATION OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986	05/21/87	- THOMAS, L M /EPA	Final	4	2		
XXX4	25 GUIDANCE MANUAL ON THE RCRA REGULATION OF RECYCLED HAZARDOUS WASTES	01/01/86	- INDUSTRIAL ECONOMICS, INC - OSM	Final	350	2		OSMER #9441 00-2
XXX5	25 INTERIM RCRA/CERCLA GUIDANCE ON NON-CONTIGUOUS SITES AND ON SITE MANAGEMENT OF WASTE AND TREATMENT RESIDUE	01/27/86	- PORTER, J W /OSMER	Final	8	2	1) COMBINING HAZARDOUS WASTE SITES FOR REM ACTION	OSMER #9347 0-1
2400	23 CRITERIA FOR IDENTIFYING AREAS OF VULNERABLE HYDROGEOLOGY UNDER RCRA STATUTORY INTERPRETIVE GUIDANCE [Secondary Reference]	07/01/86	- OSMER/OSW	Final	950	2		OSMER #9472 00-2A
2401	24 FINAL RCRA COMPREHENSIVE GROUND-WATER MONITORING EVALUATION (CME) GUIDANCE (EXHIBIT) [Secondary Reference]	12/19/86	- LUCERO, G A /OMPE	Final	55	2	1) RELATIONSHIP OF TECHNICAL INADEQUACIES TO GROUND-WATER PERFORMANCE STANDARDS	OSMER #9950 2
2405	24 OPERATION AND MAINTENANCE INSPECTION GUIDE (RCRA GROUND-WATER MONITORING SYSTEMS) [Secondary Reference]	01/30/88	- OSMER/OMPE/RCRA ENFORCEMENT DIVISION	Final	50	2	1) TRANSMITTAL MEANS RE SAME SUBJECT	OSMER #9950 3
2407	25 RCRA GROUND-WATER MONITORING TECHNICAL ENFORCEMENT GUIDANCE DOCUMENT (TECD) [Secondary Reference]	09/01/86	- EPA	Final	270	2		OSMER #9950 1
2408	25 RCRA GROUND-WATER MONITORING TECHNICAL ENFORCEMENT GUIDANCE (EXHIBIT, TECD: EXECUTIVE SUMMARY [Secondary Reference]	07/01/87	- LUCERO, G A /OMPE	Final	8	1		OSMER #9950 1-A

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9001	32 RRA/CERCLA DECISIONS MADE ON REMEDY SELECTION (Secondary Reference)	06/24/85	- KILPATRICK, M /COMPLIANCE BRANCH, OWE Final		3	2		
** Water Quality								
4000	26 ALTERNATE CONCENTRATION LIMIT GUIDANCE PART I, ACL POLICY AND INFORMATION REQUIREMENTS	07/01/87	- OSM/WHO	Final	124	2		OSMER #9481 00 60
4001	26 GUIDANCE DOCUMENT FOR PROVIDING ALTERNATE WATER SUPPLIES	02/01/88	- OERR	Final	64	2		OSMER #9355 3-03
4002	26 INTERIM FINAL GUIDANCE ON REMOVAL ACTION LEVELS AT CONTAMINATED DRINKING WATER SITES	10/06/87	- OSMER/OERR	Final	9	2		OSMER #9360 1-01
4003	26 QUALITY CRITERIA FOR WATER 1986	05/01/87	- OFFICE OF WATER REGULATIONS AND STANDARDS	Final	325	2		EPA/440/5-86-001
2701	16 CARBON ADSORPTION ISOTHERMS FOR TOXIC ORGANICS (Secondary Reference)	04/01/80	- LOHRS, R A /MERL - COHEN, J M /MERL	Final	321	2		EPA/600/8-80-023
1005	1 INFORMATION ON DRINKING WATER ACTION LEVELS (Secondary Reference)	04/19/88	- FIELDS, JR, T /OSMER/ERD	Final	17	2	1) MEMO: RELEASES FROM FAMILIARLY APPLIED PESTICIDES 2) MEMO: TROPY CONTAMINATION 3) GUIDANCE FOR ETHYLENE DIBROMIDE IN DRINKING TRO	
** Risk Assessment								
5000	27 ATSDR HEALTH ASSESSMENTS ON NPL SITES	06/16/86	- DEPT. OF HEALTH AND HUMAN SERVICES/ATSDR	Draft	14	2		
5001	27 CHEMICAL, PHYSICAL & BIOLOGICAL PROPERTIES OF COMPOUNDS PRESENT AT HAZARDOUS WASTE SITES	09/27/85	- CLEMENT ASSOCIATES, INC	Final	320	2		OSMER #9850 3
5002	27 FINAL GUIDANCE FOR THE COORDINATION OF ATSDR HEALTH ASSESSMENT ACTIVITIES WITH THE SUPERFUND REMEDIAL PROCESS	05/14/87	- PORTER, J W /OSMER/OERR - ATSDR	Final	22	2	1) SAME TITLE, DATED 4/22/87	OSMER #9285 4-02
5003	27 GUIDELINES FOR CARCINOGEN RISK ASSESSMENT (FEDERAL REGISTER, SEPTEMBER 24, 1986, p. 33997)	09/24/86	- EPA	Final	13	2		

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5005	27 GUIDELINES FOR HEALTH ASSESSMENT OF SUSPECT DEVELOPMENTAL TOXICANTS (FEDERAL REGISTER, SEPTEMBER 24, 1986, p. 34028)	09/24/86	- EPA	Final	14	2		
5006	27 GUIDELINES FOR MUTAGENICITY RISK ASSESSMENT (FEDERAL REGISTER, SEPTEMBER, 24, p. 34006)	09/24/86	- EPA	Final	8	2		
5007	27 GUIDELINES FOR THE HEALTH RISK ASSESSMENT OF CHEMICAL MIXTURES (FEDERAL REGISTER, SEPTEMBER 24, 1986, p. 34014)	09/24/86	- EPA	Final	13	2		
5008	28+ HEALTH EFFECTS ASSESSMENT DOCUMENTS (58 CHEMICAL PROFILES) VOL 28: ACETONE, ARSENIC, ASBESTOS, BARIUM, BENZ(a)PYRENE, CALCIUM, CARBON TETRACHLORIDE, CHLOROBENZENE, CHLORDANE, CHLOROFORM, COAL TARS, COPPER, CRESOLS, CYANIDE, CDT, 1,1-DICHLOROETHANE, 1,2-DICHLOROETHANE; VOL 29 1,1-DICHLOROETHYLENE, 1,2-DICHLOROETHYLENE, CIS-1,2-DICHLOROETHYLENE, ETHYLBENZENE, CYCLIC ETHERS, HEXA(1,8)CLODIBENZENE, HEXA(1,8)CLODIBUTADIENE, HEXA(1,8)CLODIPENTADIENE, HEXA(1,8)CLODIPENTADIENE, IRON (AND COMPOUNDS), LEAD, LITHIUM, MANGANESE (AND COMPOUNDS), MERCURY, METHYL ETHYL KETONE, METHYLENE CHLORIDE, N-NITROETHYLENE, NICKEL, PENTACHLOROBENZENE, PHENOL, PHENANTHRENE, VOL 30 POLYCHLORINATED BIPHENYLS (PCBS), POLYCYCLIC AROMATIC HYDROCARBONS (PAHS), PYRENE, SELENIUM (AND COMPOUNDS), SODIUM CYANIDE, SULFURIC ACID, 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN, 1,1,2,2-TETRACHLOROETHANE, TETRACHLOROETHYLENE, TOLUENE, 1,1,2-TRICHLOROETHANE, 1,1,1-TRICHLOROETHANE, TRICHLOROETHYLENE, 2,4,5-TRICHLOROPHENOL, 2,4,6-TRICHLOROPHENOL, TRIVALENT CHROMIUM, VINYL CHLORIDE, XYLENE, ZINC (AND COMPOUNDS)	09/01/84	- CERCLA/EPA/ECAD - CERCLA/CERL	Final	1750	2		EPA/540/1-86/001-058
5009	31 INTEGRATED RISK INFORMATION SYSTEM (IRIS) [A COMPUTER-BASED HEALTH RISK INFORMATION SYSTEM AVAILABLE THROUGH E-MAIL--BROCHURE ON ACCESS IS INCLUDED]	-	- CERCLA	Final	-	2		

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5011	31 PUBLIC HEALTH RISK EVALUATION DATABASE (PIRED) (USER'S MANUAL AND TWO DISKETTES CONTAINING THE DBASEIII PLUS SYSTEM ARE INCLUDED)	09/16/88	OEER/TOXICS INTEGRATION BRANCH	Final	-	2		
5012	31 ROLE OF ACUTE TOXICITY BIOASSAYS IN THE REMEDIAL ACTION PROCESS AT HAZARDOUS WASTE SITES	08/01/87	ATHEY, L. A., ET AL /PACIFIC NORTHWEST LABORATORY - MILLER, W. E. /CORVALLIS ENVIRONMENTAL RESEARCH LAB	Final	106	2		EPA/600/8-87/044
5013	31 SUPERFUND EXPOSURE ASSESSMENT MANUAL	04/01/88	OEER	Final	160	1		COSMER #9285 5-1
5014	31 SUPERFUND PUBLIC HEALTH EVALUATION MANUAL	10/01/86	OEER - COSMER	Final	500	1		COSMER #9285 4-1
5015	31 TOXICOLOGY HANDBOOK	08/01/85	LIFE SYSTEMS, INC. - TYBURSKI, T. E. /OMPE	Draft	126	2		COSMER #9850 2
6000	32 ENVIRONMENTAL ASSESSMENT GUIDANCE [Secondary Reference]	11/22/85	PORTER, J. W. /COSMER	Final	11	2		COSMER #9850 0-1
** Cost Analysis								
6000	32 REMEDIAL ACTION COSTING PROCEDURES MANUAL	10/01/87	JRB ASSOCIATES/ODM FILL - OED/MERL - COSMER/OEER	Final	56	1		
6001	32 REMOVAL COST MANAGEMENT MANUAL	04/01/88	COSMER/OEER	Final	170	1		COSMER #9360 0-03H
(1003)	31 ENVIRONMENTAL REVIEW REQUIREMENTS FOR REMOVAL ACTIONS [Secondary Reference]	04/13/87	OEER/ERD	Final	6	2		COSMER #9318 0 05
** Community Relations								
7000	32 COMMUNITY RELATIONS IN SUPERFUND A HANDBOOK (INTERIM VERSION)	06/01/88	OEER	Final	188	2	1) CHAP 6 OF THE COMM REL HANDBOOK 11/03/88	COSMER #9230 0-03H

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Doc		Date	Authors	Status	Pages	Tier	Attachments	OSWER/EPA Number
No.	Title							
** Enforcement								
8000	32 ENDANGERMENT ASSESSMENT GUIDANCE	11/22/85	PORTER, J W /OSWER	Final	11	2		OSWER #9850 0-1
8001	32 INTERIM GUIDANCE ON POTENTIALLY RESPONSIBLE PARTY PARTICIPATION IN REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES	05/16/88	PORTER, J W /OSWER	Final	37	2		OSWER #9835 1a
** Selection of Remedy/Decision Documents								
9000	32 INTERIM GUIDANCE ON SUPERFUND SELECTION OF REMEDY	12/24/86	PORTER, J W /OSWER	Final	10	2		OSWER #9355 0-19
9001	32 RCRA/CERCLA DECISIONS MADE ON REMEDY SELECTION	06/24/85	KILPATRICK, M /COMPLIANCE BRANCH, ONPE	Final	3	2		



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

Attachment D

NOV 17 1993

REPLY TO THE ATTENTION OF

HSE-5J

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ruetgers-Nease Chemical Company, Inc.
c/o Howard Greenberg, Esq.
201 Struble Road
State College, Pennsylvania 16801

Re: Nease Chemical Site
Salem, Ohio

Dear Mr. Greenberg:

Enclosed please find an executed copy of the Administrative Order by Consent issued for this Site pursuant to Sections 106 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9606 and 9622. Thank you for your cooperation in this matter.

If you have any questions regarding this Order, please contact Cynthia N. Kawakami, Assistant Regional Counsel, at (312) 997-0564 or Sheila Sullivan, On-Scene Coordinator, at (312) 886-5251.

Sincerely yours,

William E. Mund, Director
Waste Management Division

Enclosure

cc: Janice A. Carlson, OEPA Superfund Coordinator
Mr. Ralph E. Pearce, Ruetgers-Nease Chemical Company, Inc.
Michael L. Hardy, Esq., Thompson, Hine & Flory

bcc: Docket Analyst, ORC (CS-3T)
Cynthia Kawakami, ORC (CS-3T)
Wally Nied, OSC (HSE-5J)
Sheila Sullivan, OSC (HSRM-6J)
Jose Cisneros, ESS (HSE-5J)
Debbie Regel, ESS (HSE-5J)
Mary Ellen Ryan, SFAS (MF-10J)
Oliver Warnsley, CRS (HSM-5J)
EERB Site File
EERB Read File
Toni Lesser, Public Affairs (P-19J) w/out attachments
Sheila Huff, Department of Interior
Joseph Trocchio, OEPA
Fran Kovac, OEPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

IN THE MATTER OF:

Nease Chemical Site
Salem, Ohio

Respondent:

Ruetgers-Nease Chemical Company,
Inc.

) Docket No. **V-W- '94-C-21**
)

) ADMINISTRATIVE ORDER BY
) CONSENT PURSUANT TO
) SECTION 106 OF THE
) COMPREHENSIVE
) ENVIRONMENTAL RESPONSE,
) COMPENSATION AND
) LIABILITY ACT OF 1980,
) as amended, 42 U.S.C.
) Section 9606(a)
)

PREAMBLE

The United States Environmental Protection Agency (U.S. EPA) and the Respondent have each agreed to the making and entry of this Order by Consent. No action taken by Respondent in entering into or pursuant to this Order by Consent shall be construed as an admission of liability or violation of any federal, state or local laws.

It is issued pursuant to the authority vested in the President of the United States by Sections 106(a) and 122 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. Section 9606(a), as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499 (CERCLA), and delegated to the Administrator of the U.S. EPA by Executive Order No. 12580, January 23, 1987, 52 Federal Register 2923, and further delegated to the Assistant Administrator for Solid Waste and Emergency Response and the Regional Administrators by U.S. EPA Delegation Nos. 14-14, 14-14-C and 14-14-D, and to the Director, Waste Management Division, Region V, by Regional Delegation Nos. 14-14-A, 14-14-C and 14-14-D.

A copy of this Order, and all subsequent related correspondence and/or reports, will also be provided to the State of Ohio, which has been notified of the issuance of this Order as required by Section 106(a) of CERCLA, 42 U.S.C. Section 9606(a). This Order requires the Respondent to undertake and complete emergency removal activities to abate conditions which U.S. EPA has determined may present an imminent and substantial endangerment to the public health or welfare or the environment because of an actual or threatened release of hazardous substances at the Site.

FINDINGS

Based on available information, including the Administrative Record in this matter, U.S. EPA hereby finds:

1. The Nease Chemical Company (Nease Chemical) is located on State Route 14 approximately 2.5 miles northwest of Salem, Ohio. The plant is bordered by State Route 14 to the south, a residential area to the east, agricultural/residential areas to the north and west, and an industrial facility on the northeast. The main access gate is located on the east side of State Route 14. The Pennsylvania Railroad tracks pass through the property.
2. The headwaters of Middle Fork Little Beaver Creek (MFLBC) originate approximately four river miles upstream of the Nease Chemical Site. The Creek flows north from the Nease Chemical Site about five river miles through pasture lands then turns to flow south through the Beaver Creek State Park and finally empties into the Ohio River near East Liverpool, Ohio. Observed Site topography and a topographic map of the area suggest that the direction of ground water and surface water flow at the Nease Chemical property would be east toward the MFLBC. The surficial geology which is of Pleistocene (Wisconsinan) age, consists mainly of loam and the Kent glacial tills.
3. The Nease Chemical Company owned and operated a chemical manufacturing plant from 1961 until 1973. Manufactured products included household cleaning compounds, fire retardants, pesticides, and chemical intermediates. During the operation of the plant, unlined lagoons were used as part of a wastewater treatment system that included air scrubbers and a multiple pond/settling tank system for neutralization and treatment of acidic wastes. Some wastes from the plant processes were put into 55-gallon drums which were buried on the Nease Chemical Company Site. In 1982 and 1983, surveys were done and, as a result, approximately 100 of these drums were found and removed by Ruetgers-Nease. In 1973, Nease Chemical entered into a Consent Order with the Ohio Environmental Protection Agency (OEPA) to discontinue manufacturing operations until a new wastewater permit could be obtained from the OEPA. Subsequently, Nease Chemical decided not to build the wastewater treatment system and, instead, chose to discontinue operations in 1973. The Nease Chemical plant was dismantled and decommissioned in 1974 and 1975 subject to the supervision of the OEPA. In 1977, Ruetgers Chemical, Inc. purchased the Nease Chemical Company along with

all of its assets, including the vacant land at the former Salem Plant, and formed the Ruetgers-Nease Chemical Company, Inc. (Ruetgers-Nease).

4. From 1961 to 1972 the chemicals manufactured at Nease Chemical included Mirex, diphenyl-sulfone, chloramine B, benzene sulfonic acid, methoxychlor, and hexachloroethylene. Also used in the manufacture of products at Nease Chemical were chloroform, tetrachloroethane, trichloroethene, benzene, toluene, and xylene. These include compounds that are known or suspected human carcinogens.
5. In late 1983, the Nease Chemical Site was placed on the National Priorities List (NPL). Pursuant to the Administrative Order by Consent effective February 26, 1988, Ruetgers-Nease is presently conducting a Remedial Investigation/Feasibility Study (RI/FS) for the Site. Ruetgers-Nease has placed 70 groundwater monitoring wells on-site and off-site and periodically monitors them for contaminants. The data from previous groundwater analyses have shown concentrations of up to 150 parts per billion (ppb) of Mirex.
6. In September and October of 1987, the U.S. EPA conducted sampling of the sediments and surface water of the MFLBC. Sediment and fish samples were collected downstream of the Nease Chemical Site at the confluence of the Ohio River. Analysis of the samples indicated the presence of photomirex, diphenyl-sulfone, 3,4-dichloronitrobenzene, kepone, methoxychlor, benzene, trichloroethene (TCE), tetrachloroethene (PCE), and numerous other chemical contaminants. Levels of Mirex found in the sediments and fish exceeded advisory levels developed by U.S. EPA Region V in 1989 specifically for this Site to limit human exposure downstream from the Nease Chemical Site. The Ohio Department of Health (ODH) issued a health advisory for the MFLBC, warning people not to fish or swim. The Respondent, pursuant to an Administrative Order on Consent, is currently completing updated environmental samplings on and off the Nease Chemical Site, and evaluating their potential impact as part of a Remedial Investigation/Feasibility Study. This study eventually will lead to a final determination by the U.S. EPA as to the need for, and type of remediation to be undertaken.
7. In 1987 and 1989, three farmers were advised by the ODH to limit access of their cattle to the MFLBC and adjacent sediments in order to keep levels of Mirex in

- the milk and meat below the Food and Drug Administration (FDA) action level of 100 ppb. Levels of Mirex were found to be as high as 77 ppb in milk samples from the farms adjacent to the Creek.
3. On November 24, 1992, the U.S. EPA Technical Assistance Team (TAT) collected soil and water samples from a leachate seep on the Nease Chemical Site. The soil contained levels of chlorobenzene at 880 ppb and Mirex at 3,200 ppb. The water contained vinyl chloride at 190 ppb, trans-1,2-dichloroethene at 390 ppb, chloroform at 5 ppb, 1,2-dichloroethane at 67 ppb, TCE at 68 ppb, benzene at 73 ppb, toluene at 22 ppb, chlorobenzene at 340 ppb, and Mirex at 2 ppb. The Mirex samples were analyzed using EPA Method 8080.
 9. On April 24, 1992, U.S. EPA and TAT collected one water sample from the leachate collector, one surface water sample from an excavated drainage ditch located adjacent to the leachate collector, and one sediment sample from the excavated drainage ditch on the Nease Chemical Site. The Mirex samples were then analyzed using EPA Method 8080 for pesticides. Chemical analysis of the sediment sample indicated the presence of Mirex at 4,400 ppb, 1,2-dichloroethene (total) at 2,000 ppb, methylene chloride at 1,800 ppb, and PCE 1,900 ppb. The surface water sample revealed the presence of Mirex at 2.5 ppb, 1,2-dichloroethene (total) at 4,000 ppb, methylene chloride at 1,000 ppb, and acetone at 2,000 ppb.
 10. On October 15, 1992, U.S. EPA and TAT collected additional sediment and water samples on or immediately adjacent to the Nease Chemical Site. The surface water sample analysis showed the presence of 1,1,2,2-tetrachloroethane at 1,500 ppb, 1,2-dichloroethane at 710 ppb, TCE at 420 ppb, benzene at 1,200 ppb, PCE at 570 ppb, and toluene at 120 ppb. The Mirex samples were then analyzed using EPA Method 8080 for pesticides. The sediment samples showed the presence of Mirex in all of the sample locations. The highest concentration was 170,000 ppb.

DETERMINATIONS

Based on the foregoing Findings, U.S. EPA has determined that:

1. Nease Chemical is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. Section 9601(9).
2. The Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. Section 9601(21).

3. The Respondent is a past and present owner and operator of the Nease Chemical facility. The Respondent is therefore a liable person under Section 107(a) of CERCLA, 42 U.S.C. Section 9607(a).

4. Chlorobenzene, 1,2-dichloroethene, chloroform, 1,2-dichloroethane, TCE, benzene, toluene, PCE, tetrachloroethane, and Mirex are "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14).

5. The documented past and present, and/or potential for future migration of hazardous substances from the facility constitutes an actual or threatened "release" as that term is defined in Section 101(22) of CERCLA, 42 U.S.C. Section 9601(22).

6. The actual or threatened release of hazardous substances from the facility may present an imminent and substantial endangerment to the public health, welfare, or the environment.

7. The actions required by this Order, if properly performed, are consistent with the National Contingency Plan (NCP), 40 CFR Part 300, as amended, and CERCLA; and are reasonable and necessary to protect the public health, welfare and the environment because of the following factors:

- a. **actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants;**

Populations and the environment surrounding the Site are actually or potentially exposed to hazardous material from the Site because of the facility's proximity to residential and agricultural areas. The nearest residence is approximately 50 feet from the Nease Chemical Site. There are also some dairy farms in the vicinity of the Site. On-site tributaries, which empty into MFLBC, could provide an avenue for hazardous substances to come into contact with and contaminate wildlife and domestic animals, and to enter the food chain. A fence currently surrounds the Site. Since 1982, on-site tributaries have been addressed with the installation and periodic upgrading of fabric filter barriers, rock barriers, and the presence of soil erosion control measures such as a seeded grass covered area, geotextile erosion control matting, and diversion ditches and outlet control structures to serve as up-stream measures to limit transport of sediment into the MFLBC and to serve as an erosion control measure.

- b. **weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;**

The facility is located in Northeast Ohio which has heavy rainstorms in the summer and heavy snow in the winter. The potential for surface run-off from the contaminated areas of the Site to the surrounding property exists during heavy precipitation events. There is also a potential for contaminant migration into the groundwater and the MFLBC.

- c. **other situations or factors which may pose threats to public health or welfare or the environment.**

The potential exists for surface water contamination to migrate from the Site to the MFLBC, a tributary of the Ohio River. A sediment sample collected from the off-site tributary adjacent to the east side of the railroad tracks, has indicated Mirex at elevated levels.

ORDER

Based upon the foregoing Findings and Determinations, and pursuant to Section 106(a) of CERCLA, 42 U.S.C. Section 9606(a), it is hereby ordered and agreed that Respondent will undertake the following actions at the facility:

1. Within thirty (30) calendar days after the effective date of this Order, the Respondent shall submit to U.S. EPA for approval, and to OEPA, a Work Plan for the removal activities ordered as set forth in Paragraph 4 below. The Work Plan shall provide a concise description of the activities to be conducted to comply with the requirements of this Order. The Work Plan shall be reviewed by U.S. EPA, which may approve, disapprove, require revisions, or modify the Work Plan. The Respondent is required to submit to U.S. EPA and OEPA, a revised Work Plan within ten (10) business days of any disapproval of the Work Plan by U.S. EPA. The Respondent shall implement the Work Plan as finally approved by U.S. EPA, including any modifications. Once approved, the Work Plan shall be deemed to be incorporated into and made a fully enforceable part of this Order.
2. The Work Plan shall contain a Site safety and health plan, a sampling and analysis plan, and a schedule of the work to be performed. The Site safety and health plan shall be prepared in accordance with the Occupational Safety and Health Administration (OSHA) regulations applicable to Hazardous Waste Operations and Emergency Response, 29 CFR Part 1910. The Work Plan and other submitted documents shall demonstrate that the Respondent can properly conduct the actions required by this Order.

3. The Respondent shall retain a contractor qualified to undertake and complete the requirements of this Order, and shall notify U.S. EPA of the name of such contractor within five (5) business days of the effective date of this Order. U.S. EPA retains the right to disapprove of any, or all, of the contractors and/or subcontractors retained by the Respondent. In the event U.S. EPA disapproves of a selected contractor, the Respondent shall retain a different contractor to perform the work, and such selection shall be made within two (2) business days following U.S. EPA's disapproval.

4. Within five (5) business days after U.S. EPA approval of the Work Plan, the Respondent shall implement the Work Plan as approved or modified by U.S. EPA. Failure of the Respondent to properly implement all aspects of the Work Plan shall be deemed to be a violation of the terms of this Order. The Work Plan shall require the Respondent to perform, and complete within ninety (90) calendar days after U.S. EPA approval of the Work Plan, at a minimum, the following removal activities:

- a. Prior to the complete installation and operation of the on-site leachate treatment system, continue to collect all contaminated groundwater from the existing collection areas, and properly dispose of it off-site; and
- b. Install float activated pumps in the existing groundwater collection system and initiate continuous pumping of leachate.
- c. Upon the effective date of this Order, the Respondent shall take steps to commence operation of the existing on-site leachate treatment system located in the metal warehouse building on the Nease property. Nease will ensure that the existing on-site leachate treatment system is operating within 10 business days of the effective date of this Order. Nease will meet all substantive permit requirements for effluent discharge. Within 15 business days of the effective date of this Order, when the system is effectively operating, Nease will conduct a one-week trial run of the treatment system and will have the data from the trial run analyzed. The trial run and data analysis period must be completed within 45 calendar days. If the analyzed results demonstrate that the existing treatment system is unable to meet permit requirements, Nease will so advise U.S. EPA by telephone and in writing within two business days of receiving the results and will provide U.S. EPA with a copy of such analytical results. Nease will then have 45 days from notification to

develop and submit to U.S. EPA for its approval, a Work Plan Addendum for the necessary modifications to the system, and a schedule for implementation of the modifications that includes a final date upon which the system will be fully operational. Within 7 calendar days of receipt of U.S. EPA's approval of the Work Plan Addendum, Nease will commence implementation of those modifications in accordance with the approved schedule, and will achieve compliance with those effluent discharge permit requirements by no later than the date specified in the Addendum to the Work Plan that is finally approved by U.S. EPA.

- d. Review shallow hydrogeologic data from the Remedial Investigation and July 29, 1993 sampling results and, utilizing that information, 1) develop, as an addendum to the Work Plan, surface water management and leachate collection and treatment measures for the area of the Nease Chemical Site that lies Northeast of the Conrail tracks, and 2) develop, as an addendum to the Work Plan, any additional necessary measures for the existing leachate collection and treatment system on the Nease Chemical Site at large. The addendum to the Work Plan shall include a schedule for the installation of the work discussed therein.
- e. In accordance with the work schedule contained in the final U.S. EPA-approved addendum to the Work Plan addressed in subpart d. above, completely install and commence operation of the surface water management and leachate collection and treatment measures for the area of the Nease Chemical Site that lies Northeast of the Conrail tracks, and completely install and commence operation of any additional necessary measures for the existing leachate collection and treatment system on the Nease Chemical Site at large.
- f. Inspect, monitor, contain, and address documented leachate releases and seeps until the commencement of Remedial Design/Remedial Action activities at the Site, or the termination of this Order, whichever comes first.

5. All materials removed from the Nease Chemical facility shall be disposed of or treated at a facility approved by the On-Scene Coordinator and in accordance with the Resource Conservation and Recovery Act of 1976 (RCRA), 42 U.S.C. Section 6901, et seq., as amended, the U.S. EPA Revised Off-Site Policy, and all other applicable Federal, State, and local requirements.

6. On or before the effective date of this Order, the Respondent shall designate a Project Coordinator. The U.S. EPA has designated Sheila Sullivan, of the Remedial and Enforcement Response Branch, Section II, as its On-Scene Coordinator. The On-Scene Coordinator and the Project Coordinator shall be responsible for overseeing the implementation of this Order. To the maximum extent possible, communication between the Respondent and the U.S. EPA, and all documents, reports and approvals, and all other correspondence concerning the activities relevant to this Order, shall be directed through the On-Scene Coordinator and the Project Coordinator. During implementation of the Work Plan, the OSC and the Project Coordinator shall, whenever possible, operate by consensus, and shall attempt in good faith to resolve disputes informally through discussion of the issues.

7. The U.S. EPA and the Respondent shall each have the right to change their respective designated On-Scene Coordinator or Project Coordinator. U.S. EPA shall notify the Respondent, and the Respondent shall notify U.S. EPA, as early as possible before such a change is made. Notification may initially be verbal, but shall promptly be reduced to writing.

8. The U.S. EPA On-Scene Coordinator shall have the authority vested in an On-Scene Coordinator by the NCP, 40 CFR Part 300, as amended, including the authority to halt, conduct, or direct any work required by this Order, or to direct any other response action undertaken by U.S. EPA or the Respondent at the facility.

9. No extensions to the time frames in this Order shall be granted without sufficient cause. All extensions must be requested, in writing, and shall not be deemed accepted unless approved, in writing, by U.S. EPA.

10. This Order and all instructions by the U.S. EPA On-Scene Coordinator or designated alternate that are consistent with the National Contingency Plan and this Order shall be binding upon the Respondent, and the employees, agents, contractors, successors and assigns of the Respondent.

11. To the extent that the facility or other areas where work under this Order is to be performed is owned by, or in possession of, someone other than the Respondent, the Respondent shall attempt to obtain all necessary access agreements. In the event that after using their best efforts the Respondent are unable to obtain such agreements, the Respondent shall immediately notify U.S. EPA and U.S. EPA may then assist the Respondent in gaining access, to the extent necessary to effectuate the response activities described herein, using such means as it deems appropriate. The Respondent shall reimburse U.S. EPA for all attorneys' fees and court costs it incurs in assisting the Respondent to obtain access.

12. The Respondent shall provide access to the facility to U.S. EPA employees, OEPA employees, and U.S. EPA- and OEPA-authorized contractors, agents, and consultants at anytime; and shall permit such persons to be present and move freely in the area in order to conduct inspections, including taking photographs and videotapes of the facility, to do cleanup/stabilization work, to take samples, to monitor the work under this Order, and to conduct other activities which the U.S. EPA determines to be necessary.

13. This Order shall be effective on the date of signature by the Director, Waste Management Division.

14. The Respondent shall provide a written monthly progress report to the On-Scene Coordinator regarding the actions and activities undertaken under this Order. At a minimum, these progress reports shall:

- a. Identify the location of current work and activity;
- b. Describe status of work and progress to date;
- c. Demonstrate the percentage of work completed in accordance with the approved schedule;
- d. Describe difficulties encountered during the reporting period;
- e. Describe actions being taken to rectify problems;
- f. Describe activities planned for the next month;
- g. Identify changes in key personnel;
- h. List target and actual completion dates for each element of activity, including the project completion;
- i. Provide an explanation of any deviation from the milestones in the Work Plan schedule;
- j. Provide a summary of all environmental sampling that occurred during the reporting period; and
- k. Provide all sampling results received during the reporting period.

15. The Respondent agrees to retain for six years following completion of the activities required by this Order copies of all records, files and data relating to hazardous substances found on the Site, or related to the activities undertaken pursuant to this Order, whether or not those documents were created pursuant to this Order. The Respondent shall acquire and retain copies of

all documents relating to the Site that are in the possession of their contractors, agents and employees. The Respondent shall notify U.S. EPA and OEPA at least sixty (60) calendar days before any documents retained under this Paragraph are to be destroyed. The documents retained under this Paragraph shall be made available to the U.S. EPA and OEPA upon request.

16. The Respondent shall pay all past costs and oversight costs of the United States related to the Nease Chemical Site which are not inconsistent with the National Contingency Plan. The United States shall submit an itemized cost statement entitled "Itemized Cost Summary" to the Respondent annually or, if sooner, not less than 60 calendar days after submission of the Final Report provided for in Paragraph 25 of this Order. Payments shall be made within 60 calendar days of Respondents' receipt of the cost statement. Payments shall be made to the EPA Hazardous Substances Superfund delivered to the U.S. EPA, Attn: Superfund Accounting, P.O. Box 70753, Chicago, Illinois 60673, in the form of a certified or cashier's check payable to "EPA Hazardous Substances Superfund." The face of the check should note that the payment is for the Nease Chemical Site, Superfund Site Identification Number A3. A copy of the check(s) submitted must be sent simultaneously to the U.S. EPA representatives indicated in Paragraph 17 below.

17. A notice, document, information, report, plan, approval, disapproval or other correspondence required to be submitted from one party to another under the Order shall be deemed submitted either when hand delivered or as of the date of receipt by certified mail, return receipt requested.

Submissions to the Respondent shall be submitted to:

Ralph E. Pearce
Ruetgers-Nease Chemical Company, Inc.
201 Struble Road
State College, Pennsylvania 16801

Howard Greenberg, Esq.
Ruetgers-Nease Chemical Company, Inc.
201 Struble Road
State College, Pennsylvania 16801

Submissions to the U.S. EPA shall be submitted to:

Sheila Sullivan
Remedial Project Manager/On-Scene Coordinator
OH/MN Remedial Response Section II (HSRM-6J)
U.S. EPA - Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

And:

Cynthia N. Kawakami
Assistant Regional Counsel
Office of Regional Counsel (CS-3T)
U.S. EPA - Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

And:

Joseph Trocchio
Ohio Environmental Protection Agency
2110 East Aurora Road
Twinsburg, Ohio 44087

18. If any provision of this Order is deemed invalid or unenforceable, the remainder of this Order shall remain in full force and effect.

ADDITIONAL WORK

19. In the event that U.S. EPA or the Respondent determines that additional work is necessary to accomplish the objectives of this Order, U.S. EPA shall specify in writing the reasons why such additional work is necessary and a schedule for completion; provided, however, that any such work should be consistent with the NCP, CERCLA, and Ohio state law and not arbitrary and capricious. If the Respondent does not agree to perform additional work as specified by U.S. EPA, the dispute shall be resolved pursuant to Paragraphs 34 - 38 of this Consent Order.

Any additional work determined to be necessary to the Respondent shall be subject to the approval by the U.S. EPA.

Any additional work determined to be necessary by the Respondent and approved by the U.S. EPA or determined to be necessary by the U.S. EPA shall be completed by the Respondent in accordance with the standards, specifications and schedule determined or approved by the U.S. EPA, except in the event that Respondent has invoked the dispute resolution provisions of Paragraphs 34 - 38 of this Consent Order.

STIPULATED PENALTIES

20. For each day the Respondent fails to meet the deadlines set forth in the Consent Order and Work Plan, the Respondent shall be liable as follows:

- a. For failure to submit a complete Work Plan pursuant to Paragraph 1 of this Order at the time required under terms of this Order: Five Hundred (\$500) Dollars per day for the first one (1) to seven (7) days of delay, and One Thousand Dollars (\$1,000) per day for each day of delay, or part thereof, thereafter;
- b. For failure to commence and perform work prescribed in this Consent Order and a U.S. EPA approved Work Plan: One Thousand (\$1,000) per day for the first one (1) to seven (7) days of delay, and Two Thousand Dollars (\$2,000) per day for each day of delay, or part thereof, thereafter;
- c. For failure to submit the monthly written Progress Reports pursuant to Paragraph 14, or the Final Report pursuant to Paragraph 25, at the time required under the terms of this Order: Two Hundred Fifty Dollars (\$250) per day for the first one (1) to seven (7) days of delay, and Five Hundred Dollars (\$500) per day for each day of delay, or part thereof, thereafter;
- d. For failure to comply with any provisions of this Order after notice by U.S. EPA of noncompliance: Two Thousand Dollars (\$2,000) per day for the first one (1) to seven (7) days of delay, and Four Thousand Dollars (\$4,000) per day for each day of delay, or part thereof, thereafter;

21. All penalties which accrue pursuant to the requirements of this Order shall be paid within fifteen (15) business days of written demand by U.S. EPA. Payment shall be made to the EPA Hazardous Substances Superfund delivered to the U.S. EPA, Attn: Superfund Accounting, P.O. Box 70753, Chicago, Illinois 60673, in the form of a certified or cashier's check payable to "EPA Hazardous Substances Superfund." The face of the check should note that the payment is for the Nease Chemical Site.

22. Pursuant to 31 U.S.C. Section 3717, interest shall accrue on any amount of overdue stipulated penalties at a rate established by the United States Treasury. Stipulated penalties shall accrue, but need not be paid, during any dispute resolution period concerning the particular penalties at issue. If the Respondent prevails upon resolution, the Respondent shall pay only such penalties as the resolution requires.

23. Payment of Stipulated Penalties will not relieve the Respondent from complying with the terms of this Consent Order. U.S. EPA retains the right to seek any remedies or sanctions available to U.S. EPA by reason of Respondent's noncompliance with the provisions of this Consent Order that are not otherwise expressly limited by these Stipulated Penalty provisions.

PENALTIES FOR NONCOMPLIANCE

24. The Respondent is advised pursuant to Section 106(b) of CERCLA, 42 U.S.C. Section 9606(b), that violation or subsequent failure or refusal to comply with this Order and any Work Plan approved under this Order, or any portion thereof, may subject the Respondent to a civil penalty of no more than \$25,000 per day for each day in which such violation occurs, or such failure to comply continues. In addition, failure to properly provide removal action upon the terms of this Order, or other subsequent orders issued by U.S. EPA, may result in liability for punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. Section 9607(c)(3).

TERMINATION AND SATISFACTION

25. The Respondent shall submit to U.S. EPA and OEPA, a final report summarizing the actions taken to comply with this Order. The report shall contain, at a minimum: identification of the facility, a description of the locations and types of hazardous substances encountered at the facility upon the initiation of work performed under this Order, a chronology and description of the actions performed (including both the organization and implementation of response activities), a listing of the resources committed to perform the work under this Order (including financial, personnel, mechanical and technological resources), identification of all items that affected the actions performed under the Order and discussion of how all problems were resolved, a listing of quantities and types of materials removed, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destination of those materials, and a presentation of the analytical results of all sampling and analyses performed and accompanying appendices containing all relevant paperwork accrued during the action (e.g., manifests, invoices, bills, contracts, permits). The final report shall also include an affidavit from a person who supervised or directed the preparation of that report. The affidavit shall certify under penalty of law that based on personal knowledge and appropriate inquiries of all other persons involved in preparation of the report, the information submitted is true, accurate and complete to the best of the affiant's knowledge and belief. The report shall be submitted within sixty (60) calendar days of completion of the work required by the U.S. EPA.

26. The provisions of this Order shall be deemed satisfied upon payment by Respondent of all sums due under the terms of this Order and upon the Respondent's receipt of written notice from U.S. EPA that the Respondent has demonstrated, to the satisfaction of U.S. EPA, that all of the terms of this Order, including any additional tasks consistent with this Consent Order

which U.S. EPA has determined to be necessary, have been completed. Respondent has the right to request the U.S. EPA in writing to approve the termination and satisfaction of this Consent Order at any time after the submission of the final report and before the commencement of remedial action activities at the Nease Chemical Site.

INDEMNIFICATION

27. The Respondent agrees to indemnify and save and hold harmless the United States Government, its agencies, departments, agents, and employees, from any and all claims or causes of action arising from, or on account of, acts or omissions of the Respondent, its officers, employees, receivers, trustees, agents, successors or assigns, in carrying out the activities pursuant to this Order. The United States Government shall not be held as a party to any contract entered into by the Respondent in carrying out activities under this Order.

RESERVATION OF RIGHTS

28. This Order is not intended for the benefit of any third party and may not be enforced by any third party.

29. The U.S. EPA and the Respondent reserve all rights, claims, demands, and defenses, including defenses and denials of and to all determinations and findings, that they may have as to each other except as otherwise provided in this Order pursuant to any available legal authority. Nothing in this Order shall expand the Respondents' ability to obtain pre-enforcement review of U.S. EPA actions. Notwithstanding any reservation of rights, the Respondent agrees to comply with the terms and conditions of this Order and consents to the jurisdiction of the U.S. EPA to enter into and enforce this Order.

30. Nothing herein is intended to release, discharge, limit or in any way affect any claim, causes of action or demands in law or equity which the parties may have against any persons, firm, trust, joint venture, partnership, corporation, or other entity not a party to this Order for any liability it may have arising out of, or relating in any way to, the generation, storage, treatment, handling, transportation, disposal, release or threat of release of any hazardous substance, hazardous waste, contaminant or pollutant at or from the Site. The parties to this Order hereby expressly reserve all rights, claims, demands and causes of action they may have against any and all other persons and entities who are not parties to this Order.

31. Nothing herein shall be construed: 1) to prevent U.S. EPA from exercising its right to disapprove work performed by the Respondent that is not in accordance with the specific language and/or the intent of an approved Work Plan for this removal action; 2) to prevent U.S. EPA from seeking legal or equitable relief to enforce the terms of this order; 3) to prevent U.S. EPA from taking other legal or equitable action not inconsistent with the Covenant Not To Sue in Paragraphs 41 through 43 of this Order; 4) to prevent U.S. EPA from requiring the Respondent in the future to perform additional activities pursuant to CERCLA, 42 U.S.C. Section 9601 et seq., or any other applicable law; or 5) to prevent U.S. EPA from undertaking response actions at the Site.

FORCE MAJEURE

32. The Respondent shall cause all work to be performed within the time limits set forth herein and in the approved Work Plan, unless performance is delayed by "force majeure". For purposes of this Order, "force majeure" shall mean an event arising from causes entirely beyond the control of the Respondent and its contractors which delays or prevents the performance of any obligation required by this Order. Increases in costs, financial difficulty, normal inclement weather, and delays encountered by the Respondent in securing any required permits or approvals are examples of events that are not considered to be beyond the control of the Respondent.

33. The Respondent shall notify the OSC within 24 hours after the Respondent becomes aware of any event which the Respondent contends constitutes a force majeure, with subsequent written notice within seven (7) calendar days of the event. Such written notice shall describe: 1) the nature of the delay, 2) the cause of the delay, 3) the expected duration of the delay, including any demobilization and remobilization resulting from the delay, 4) the actions which will be taken to prevent or mitigate further delay, and 5) the timetable by which the actions to mitigate the delay will be taken. The Respondent shall implement all reasonable measures to avoid and/or minimize such delays. Failure to comply with the notice provision of this Paragraph shall be grounds for U.S. EPA to deny the Respondent an extension of time for performance. The Respondent shall have the burden of demonstrating by a preponderance of the evidence that the event is a force majeure, that the delay is warranted under the circumstances, and that best efforts were exercised to avoid and mitigate the effects of the delay. If U.S. EPA determines a delay is or was attributable to a force majeure, the time period for performance under this Order shall be extended as deemed necessary by the OSC to allow performance.

DISPUTE RESOLUTION

34. The Parties to this Order on Consent shall attempt to resolve expeditiously and informally any disagreements concerning implementation of this Order on Consent or any Work required hereunder.

35. In the event that any dispute arising under this Order on Consent is not resolved expeditiously through informal means, any party desiring dispute resolution under this Section shall give prompt written notice to the other parties to the Order.

36. Within ten (10) calendar days of the service of notice of dispute pursuant to Paragraph 35 above, the party who gave notice shall serve on the other parties to this Order a written statement of the issues in dispute, the relevant facts upon which the dispute is based, and factual data, analysis or opinion supporting its position, and all supporting documentation on which such party relies (hereinafter the "Statement of Position"). The opposing parties shall serve their Statement of Position, including supporting documentation, no later than ten (10) calendar days after receipt of the complaining party's Statement of Position. In the event that these 10-day time periods for exchange of Statements of Position may cause a delay in the work, they shall be shortened upon and in accordance with notice by U.S. EPA.

37. An administrative record of any dispute under this Section shall be maintained by U.S. EPA. The record shall include the written notification of such dispute, and the Statements of Position served pursuant to the preceding paragraphs.

38. Upon review of the administrative record, the Director of the Waste Management Division, U.S. EPA, Region V, shall resolve the dispute consistent with the NCP and the terms of this Order.

NON-ADMISSION

39. The consent of the Respondent to the terms of this Order shall not constitute or be construed as an admission of liability or of U.S. EPA's findings or determinations contained in this Order in any proceeding other than a proceeding to enforce the terms of this Order.

CERCLA FUNDING

40. The Respondent waives any claims or demands for compensation or payment under Sections 106(b), 111 and 112 of CERCLA against the United States or the Hazardous Substance Superfund

established by 26 U.S.C. §9507 for, or arising out of, any activity performed or expenses incurred pursuant to this Consent Order.

41. This Consent Order does not constitute any decision on preauthorization of funds under Section 111(a)(2) of CERCLA.

COVENANT NOT TO SUE

42. Upon termination and satisfaction of this Administrative Order pursuant to its terms, for and in consideration of the complete and timely performance by the Respondent of the obligations agreed to in this Order, U.S. EPA hereby covenants not to sue the Respondent for judicial imposition of damages or civil penalties for any failure to perform obligations agreed to in this Order except as otherwise reserved herein.

43. Performance of the terms of this Order resolves and satisfies the liability of the Respondent to U.S. EPA for work satisfactorily performed under this Order. U.S. EPA recognizes that, pursuant to Section 113 of CERCLA, the Respondent, upon having resolved their liability with the U.S. EPA for the matters expressly covered by this Order, shall not be liable for claims for contribution regarding matters addressed in this Order. Nothing in this Order precludes the Respondent from asserting any claims, causes of action or demands against potentially responsible parties (PRPs) who are not parties to this Order for indemnification, contribution, or cost recovery.

44. In consideration of the actions to be performed by the Respondent under this Order, the U.S. EPA covenants not to sue the Respondent, its successors or assigns for any and all claims which are available to the U.S. as against the Respondent under Sections 106 and 107 of CERCLA concerning all matters satisfactorily performed.

45. Nothing herein shall be deemed to grant any rights to persons not a party to this Administrative Order by Consent, and U.S. EPA and Respondent reserve all rights against such persons.

SUBSEQUENT AMENDMENT

46. This Consent Order may be amended by mutual agreement of U.S. EPA and the Respondent. Any amendment of this Consent Order shall be in writing, signed by U.S. EPA and the Respondent and shall have as the effective date, that date on which such amendment is signed by U.S. EPA.

IN THE MATTER OF: NEASE CHEMICAL SITE,
SALEM, OHIO

SIGNATORIES

Each undersigned representative of a signatory to this Administrative Order on Consent certifies that he or she is fully authorized to enter into the terms and conditions of this Order and to bind such signatory, its directors, officers, employees, agents, successors and assigns, to this document.

Agreed this 4th day of November, 1993.

By: [Signature]
(Signature of representative)

President & CEO
(Title of representative [type])

Ruetgers-Nease Corporation d/b/a Ruetgers-Nease Chemical Company, Inc.
(Name of Respondent [type])

201 Struble Road
State College, PA 16801
(Address of Respondent [type])

The above being agreed and consented to, it is so ORDERED
this 17th day of November, 1993.

By: [Signature]
William E. Muno, Director
Waste Management Division
U.S. Environmental Protection Agency
Region V, Complainant